



Fact Sheet

Aquifer Protection Permit #P-105721

Place ID 113110, LTF 38938

Balterra Wastewater Treatment Facility

The Arizona Department of Environmental Quality (ADEQ) proposes to issue Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to A.A.C. R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	Balterra Sewer Corp
Mailing Address:	21410 N 19th Ave, Suite 201 Phoenix, AZ 85027
Facility Name and Location:	Balterra Wastewater Treatment Facility 40000 West Indian School Road Tonopah, AZ 85354 Maricopa County

Regulatory Status

An application for an Arizona Pollution Discharge Elimination System (AZPDES) permit (AZ0025585) was received on March 10, 2006. An application for an Aquifer Protection Permit (APP) was received by ADEQ on January 26, 2006. This is a new facility and there are no known compliance issues or violations.

Facility Description

Balterra Wastewater Treatment Facility (WWTF) has the capacity to collect and treat a maximum average monthly flow of 0.55 million gallons per day (MGD), upon completion of Phase IB of construction. This permit covers Phases IA and IB of construction. Phases II and III, which are not included in this permit, are intended to achieve an ultimate build-out capacity of 2.2 MGD. The treatment process for Phases IA and IB consists of an influent lift station, head works with fine screen and grit removal, a membrane bioreactor (MBR) with anoxic and aeration basins, ultraviolet (UV) disinfection, and a centrifuge. Phase IA uses a single MBR train with a treatment capacity of 0.275 MGD. Phase IB adds a second train to increase the treatment capacity to 0.55 MGD.

The primary means of effluent disposal is groundwater recharge using recharge basins. Effluent may also be discharged to an unnamed wash under a valid AZPDES permit. The WWTF will produce reclaimed water meeting Class A+ Reclaimed Water Standards (A.A.C. R18-11, Article 3) that may be delivered for beneficial use under a valid reclaimed water permit under A.A.C. R18-9 Article 7. All the sludge including screenings, grit, and scum will be hauled off-site for management and disposal in accordance with State and Federal regulations.

During Phases IA and IB, the sludge, including screenings, grit and scum, shall be hauled to a state approved landfill for management and disposal in accordance with State and Federal regulations.

In addition to the APP conditions pertaining to treatment and disposal of sewage sludge, the permittee must also comply with the requirements for sewage sludge disposal, use, and transportation in 40 Code of Federal Regulations (CFR) Part 503, 40 CFR 258: for biosolids disposed of in municipal solid waste landfills, 40 CFR 257: for all biosolids use and disposal practices not covered under 40 CFR 258 or 503, and 18 A.A.C. 9, Article 10.

During the initial start-up period, up to [PLACEHOLDER] gallons per day of influent may be vaulted and hauled off-site to an approved facility as per Section 4.1, Table I. The depth to groundwater in the area of the proposed WWTF ranges from 189 to 262 feet below ground surface (bgs), based on 2004 well data obtained from the Arizona Department of Water Resources (ADWR) Groundwater Site Inventory database, and the direction of groundwater flow is to the west-southwest.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WRP is designed to meet the treatment performance criteria for new facilities with a design flow of less than 250,000 gpd as specified in R18-9-B204.

The treatment facility shall not exceed a maximum seepage rate of 550 gallons per day per acre for all containment structures within the treatment works.

The facility shall meet the requirements for pretreatment by conducting monitoring as per R18-9-B204(B)(6)(b)(iii).

III. HYDROGEOLOGIC SETTING

Balterra WWTF is located over groundwater of the Hassayampa River Sub-basin and is part of the Phoenix Active Management Area. The depth to groundwater in the area of the proposed WWTF ranges from 189 to 262 feet below ground surface (bgs) based on 2004 well data obtained from the ADWR Groundwater Site Inventory database. The data indicates that the hydraulic gradient in the area is approximately 0.005, and the regional groundwater flow direction is to the west-southwest.

In 2005, two bore holes were drilled to depths of 200 and 300 feet, respectively. Although, a small amount of perched water was encountered in one hole at approximately 180 feet bgs, neither hole encountered the water table.

Hassayampa Subbasin (after ADWR's Phoenix AMA 3rd management plan adopted December 12, 1999)

In the far western portion of the Phoenix AMA, the Hassayampa Subbasin covers 1,200 square miles and is a gently sloping alluvial plain bounded on the north by the Vulture Mountains and the Wickenburg Mountains; on the east by the White Tank Mountains; on the south by the Buckeye Hills and the Gila Bend Mountains; and on the west by the Big Horn Mountains, the Belmont Mountains, and the Palo Verde Hills. The area is drained by the Hassayampa River, which enters the subbasin in the northeast and joins the Gila River east of Arlington. The Gila River, which flows perennially with effluent from the west Phoenix metropolitan area, crosses the southeastern tip of the subbasin. Tributaries to the Hassayampa and Gila Rivers include Jackrabbit Wash and Centennial Wash, respectively.

The sequence of basin-fill sediments in the lower Hassayampa Subbasin consists of three hydrogeologic units designated as the upper, middle, and lower alluvium (Fugro, Inc., 1980). The upper unit is 30 to 60 feet thick and consists of sand and gravel. The middle unit, 230 to 300 feet thick, consists of clay and silt. The lower unit, from 100 to more than 1,000 feet thick, consists of unconsolidated sand and moderately to well consolidated alluvial fan deposits.

Historically, groundwater entered the Hassayampa Plain from the northeast, most of which flowed south into the lower Hassayampa area. Groundwater also enters the southeastern part of the lower Hassayampa area as underflow from the southern part of the west Salt River Valley (SRV) Subbasin. Groundwater levels historically ranged from 800 feet above msl in the southern area of the subbasin to more than 1,300 feet above msl in the extreme northern reaches of the subbasin. In the lower Hassayampa area, extensive groundwater pumping for agricultural development began in the early 1950s. Approximately 24,000 acres of land were under cultivation by 1960 and 22,500 acres were under cultivation in 1982 (Stulik, 1974). As a result of groundwater pumping, water levels have declined significantly in the agricultural areas of the subbasin. From the mid-1950s through 1998, water levels declined by as much as 70 feet in the Tonopah Desert and 90 feet in the Centennial Wash area, resulting in the creation of two large cones of depression in those areas. Data from 1998 shows groundwater levels ranging from 700 feet above msl in the southern area of the subbasin to 1,350 feet above msl in the northern section. Depth to groundwater in the Hassayampa Subbasin in 1998 ranged from less than 20 feet below land surface near the Gila River in Arlington Valley to over 700 feet below land surface near the Vulture Mountains.

After passing a bedrock constriction between the Belmont Mountains and the White Tank Mountains, groundwater currently flows from the northeast to southwest toward two cones of depression in the Tonopah Desert and Centennial Wash areas. Groundwater entering the southeastern part of the lower Hassayampa area from the southern part of the West SRV Subbasin is largely captured by the cone of depression in the Centennial Wash area.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

Storm water / surface water considerations included whether the facility was located within the 100-year flood plain and whether the discharge had the potential to impact surface water drainages downgradient of the WWTP and recharge facility.

The WWTP is located within the 100-year floodplain but is protected from flooding by an earthen berm and construction of the facility components above the 100-year flood elevation.

An unnamed tributary to Winters Wash is located immediately east of the WWTP and is strictly ephemeral at this site. The AZPDES outfall is at the unnamed tributary. The unnamed tributary wash intersects and joins Winters Wash approximately 800 to 1000 feet southeast of the outfall. Winters Wash joins Centennial Wash which is a tributary to the Gila River.

The PMA for the 0.55 mgd AZPDES does not extend into Winters Wash. The DIA for the 0.55 mgd AZPDES does extend into Centennial Wash approximately 200 feet.

POC #2 is not required to installed and monitored until the discharge to the outfall reaches 0.25 mgd. Considering the effluent will be A+ and available for reuse under a valid reuse permit, it is likely that the discharge at the outfall will not reach 0.25 mgd.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

The permittee is required to demonstrate that pollutants discharged will not cause or contribute to a violation of aquifer water quality standards at the POC. The location(s) of the point(s) of compliance (POCs) which demonstrate compliance with AWQS is determined by an analysis of the pollutant management area (PMA), the discharge impact area (DIA), and locations and uses of groundwater wells in the area. The POC location(s) are selected to protect off-site uses of groundwater, to verify BADCT performance, and to allow early detection of potential impact from the WWTP discharges.

The pollutant management area (PMA) is described in A.R.S. §49-244 as the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The PMA includes horizontal space taken up by any liner, dike or other barrier designed to contain pollutants in the facility. If the facility contains more than one discharging activity, the PMA is described by an imaginary line circumscribing the several discharging activities. The PMA is defined by a line circumscribing the all components of the WWTP and recharge basins. The PMA is the boundary of the WWTP as shown on figure 1, attachment 1 submitted July 28, 2008. Figure 1 is titled Pollution Management Area and Points of Compliance by Southwest Ground-water Consultants, Inc.

The discharge impact area (DIA) is defined by A.R.S. §49-201.13. The DIA means the potential areal extent of pollutant migration, as projected on the land surface, as the result of a discharge from a facility. No changes in groundwater quality are expected because the discharges from the facility meet applicable AWQS.

The DIA for the WWTP is for 0.55 mgd. The DIA for the WWTP, including the three percolation basins, is approximately the same size and shape as the boundary of the WWTP but extends slightly to the downgradient direction, to the Southwest.

The DIA for the AZPDES outfall is for 0.55 mgd and is approximately the same size and shape of the PMA for the AZPDES outfall. It extends approximately 740 feet southeast of the outfall. The width varies from approximately 15 feet to 150 feet.

Monitoring and Reporting Requirements

To ensure that site operations do not violate Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent shall be collected at the sample tap downstream of the UV disinfection unit. The permittee shall monitor the effluent daily for flow rate and fecal coliform, monthly for total nitrogen, quarterly for metals, and semi-annually for volatile organic compounds (see Section 4.2, Tables IA-1 and IA-2 in the permit).

To ensure that site operations do not violate the Reclaimed Water Quality Standards for the beneficial use of Class A+ reclaimed water, the permittee shall monitor the reclaimed water at the same effluent sampling point as indicated above. The permittee shall monitor the reclaimed water daily for fecal coliform and turbidity, monthly for nitrogen, and on a monthly/suspended basis for enteric virus (see Section 4.2, Table IB in the permit).

The permittee shall monitor the groundwater monthly for total nitrogen, nitrate-nitrite as N, total Kjeldahl nitrogen (TKN), and total coliform, quarterly for metals, and annually for volatile organic compounds (see Section 4.2, Tables IIA and IIB in the permit).

In addition, facility inspection and operational monitoring shall be performed on a routine basis (see Section 4.2, Table III in the permit).

Point(s) of Compliance (POC)

The location of the POCs is determined by an analysis of the PMA, the DIA, and locations and uses of groundwater wells in the area. The POC locations are selected to protect off-site uses of groundwater, to verify BADCT performance, and to allow early detection of potential impact from facility discharges.

The hazardous/non-hazardous POCs are located as follows:

POC #	Descriptive Location	Latitude	Longitude
1	Near the southwest corner of the recharge basins	33° 29' 43" N	112° 55' 19" W
2	Near the southeast corner of the WWTF Boundary	33° 29' 39" N	112° 55' 08" W

VI. COMPLIANCE SCHEDULE

For each compliance schedule item listed below, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items, to the Groundwater Section. A copy of the cover letter must also be submitted to the ADEQ Water Quality Compliance Section.

Description	Due by:
POC #1 Monitor Well	
Install a groundwater monitor well at POC #1.	Within 30 days after the date of permit issuance.
Submit a Well Installation Report to the Groundwater Section.	Within 15 days after installation of the monitor well at POC #1 is complete.
Begin collecting eight (8) monthly rounds of ambient groundwater monitoring for the parameters listed in Section 4.0, Table IIB.	Within 30 days after installation of the monitor well at POC #1 is complete.
Submit an APP amendment application to the Groundwater Section, including an Ambient Groundwater Monitoring Report summarizing the results of all eight (8) rounds of monitoring at POC #1. The APP amendment application shall include proposed ALs, AQLs, sampling and reporting frequencies for routine groundwater monitoring at POC #1.	Within 12 months after the date of permit issuance.
POC #2 Monitor Well	
Submit a Well Design Report for POC #2 to the Groundwater Section.	Within 30 days after the first occurrence of discharge to AZPDES Outfall 001 equal to or greater than 0.25 mgd for seven (7) consecutive days.
Install the monitor well at POC #2 and begin collecting eight (8) monthly rounds of ambient groundwater monitoring for the parameters listed in Section 4.0, Table IIB.	Within 30 days after the first occurrence of average monthly discharge at the AZPDES Outfall 001 equal to or greater than 0.25 mgd.
Submit a Well Installation Report to the Groundwater Section.	Within 15 days after installation of the monitor well at POC #2 is completed.

Description	Due by:
Submit an APP amendment application to the Groundwater Section, including an Ambient Groundwater Monitoring Report summarizing the results of all eight (8) rounds of monitoring at POC #2. The APP amendment application shall include proposed ALs, AQLs, sampling and reporting frequencies for routine groundwater monitoring at POC #2.	Within 12 months after installation of the monitor well at POC #2 is completed.
Phase IB Construction (0.55 mgd)	
Begin construction of Phase IB.	Notify ADEQ within 15 days of the commencement date of construction of Phase IB.
Submit an Engineer's certificate of completion for Phase IB.	Within 30 days of completion of construction and prior to commencing discharge from the WWTF under Phase IB.
Notify ADEQ of commencement of discharge from the WWTF for Phase IB.	Within 15 days of commencement of discharge under Phase IB.
The permittee shall begin sampling under Table IA-2 after completion of Phase IB construction.	The first samples collected under Table IA-2 shall be collected within 30 days after the last samples collected under Table IA-1.
Deletion of Monitoring Tables	
The permittee may request an "other" amendment to delete the monitoring tables in section 4.0 that are not applicable.	Upon completion of Phase IB construction.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

Balterra Sewer Corp has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B). The WWTF was designed as per the basis of design report prepared by Black & Veatch and stamped, dated, and signed (sealed) by Stephen K. Davis on November 9, 2005, a design report addendum prepared by CSA Engineering and stamped, dated and signed (sealed) by Peter Chan

on January 20, 2006, the design report prepared and stamped, dated, and signed (sealed) by Peter Chan, P.E. (Professional Engineer) CSA Engineering dated December 14, 2007 and subsequent sealed submittals that served as additions to the design report. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The estimated dollar amount demonstrated for financial capability is \$627,250. The financial capability was demonstrated through R18-9-A203(B)(1), (3) and (4), and R18-9-A203(C)(5).

Zoning Requirements

Balterra WWTF has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(A)(2)(c).

VIII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-109(A))

The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C. R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

IX. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division - Groundwater Section - APP and Reuse Unit
Attn: Bob Manley
1110 West Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4498